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LEVEL II

Research Product 80-8/2

User Manual for the Short System Tape Generator (SSTGEN)

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This document is a user's manual for the Short System Tape Generator (SSTGEN), a utility program that executes on the AN/GYK-12(V) computer under the Programming Support System (B) Operating System (PSS/OS). SSTGEN converts compiler object decks and data decks into a system load tape, compatible with PLANIT and MADCAP system loading and operation. Input may be from cards, commercial tape, or disk; output is to commercial tape, Tape Transport Cartridge (TTC), or punched cards.

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SECTION 1

INTRODUCTION

1.1 PURPOSE

The Short System Tape Generator (SSTGEN) is a utility program that executes on the AN/GYK-12(V) under the Programming Support System (B) Operating System (PSS/OS). SSTGEN converts compiler object decks and data decks into a system load tape, compatible with PLANIT and MADCAP system loading and operation. The input (object and data decks) may be from cards, commercial tape or disk and output is to commercial tape, Tape Transport Cartridge (TTC) or punched cards.

1.2 REFERENCE DOCUMENTS

586000-906 PSS(B) User Manual,.

USACSCS-TF-1-1/2-1

SECTION 2

CONTROL CARD FORMATS

The purpose of the control cards is to select execution time options, the output media, the input media and file identification and other control directives. The control commands recognized by SSTGEN are shown in Figure 2-1.

COMMAND	CLASS	PARAGRAPH
*OPTA *OPTB *OPTC *OPTD	options	2.2
*TEST *TTC *TAPE *DECK	output	2.3
*BOOT *OBJ *OBJ,NNNN *DATA	input	2.4
*MADEOF *END	control	2.5

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Figure 2-1. SSTGEN Control Card Commands

2.1 GENERAL CONTROL CARD RULES

The following rules are applicable to SSTGEN control cards:

a. The control card must begin with asterisk (*) in column 1, followed by the command, without any intervening blanks.

b. The operand field of the control card begins in column 10 for control cards requiring parameters. Multiple required or optional parameters are separated by commas with no intervening blanks. Positional parameters must precede keyword parameters.

c. The last parameter must be followed by at least one blank column. The remainder of the card is available for user comments.

2.1.1 Positional Parameters

Positional parameters must be coded first in the operand field. The first positional parameter on an SSTGEN control card is always the FILENAME, the second positional parameter on the card is always the MEMBERNAME. Absence of either positional parameter is indicated by a comma (a null field).

EXAMPLES:

```
Col      Col
1        10

*XXX       blank in col 10 indicates blank filename,membername

*XXX     ,,ID=22  blank filename,membername keyword parameter

*XXX     TAPE,,VOL=9832  filename specified, blank membername

*XXX     TAPE  filename specified blank membername

*XXX     DISK,FILEA  filename, membername specified

*XXX     DISK,FILEA,ID=88  keyword parameter used
```

2.1.2 Keyword Parameters

Keyword parameters may be placed in the operand field, in any order, following all positional parameters. The absence or default value of a keyword parameter need not be specified. Keyword parameters are in the form "KEYWORD=parameter". The three keyword parameters recognized by SSTGEN are as follows:

a. VOL. Volume serial number identifier: this allows a particular volume to be specified for access, e.g., VOL=9832. If an ampersand (&) precedes the parameter (e.g. &TAPEF), the volume assignment is deferred until run-time when it is assigned by the computer operator. A maximum 6-character parameter is permitted (including the ampersand). By convention the serial number of a Tape Transport Cartridge (TTC) is its reel number. The default

value for an input tape is &INPUT, the default value for an output tape is &LOAD.

b. VERS. A one to three digit version identifier (i.e. level number) for an SPS disk file. The default value is the latest version.

c. ID. Program identifier: A one to four digit hexadecimal program identifier which will be converted to a right justified 32-bit binary number to be stored in the program at address 0000 for MADCAP programs and at address 0002 for PLANIT programs (see *OPTD description). The default is that no program identification will be stored.

2.2 OPTION SELECTION

Four option selection control cards are permitted. If they are used they must be the first control cards input to SSTGEN. The option cards and their effects are as follows:

a. *OPTA no parameters. The *OPTA card causes local data to be dumped on the printer for up to 10 object deck errors. With analysis, the dump can be used to determine the cause of the error.

b. *OPTB no parameters. The *OPTB card causes an IS/WAS printout of the program addressed affected by each patch card. See Figure 2-2.

```
0005 3,4,5,6,7,8,9  HALF WORD PATCH CARD

0004 IS 03000 0003 (0600  0003)   WAS 03000 0000 (0600  0000)
0006 IS 00004 0005 (0004  0005)   WAS 00000 0000 (0000  0000)
0008 IS 00006 0007 (0006  0007)   WAS 00000 0000 (0000  0000)
000A IS 00010 0009 (0008  0009)   WAS 26284 4649 (4D44  4649)

ADDRESS ——  INSTRUCTION FORMATS ——  HALFWORD FORMATS ——
```

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Figure 2-2. *OPTB Printout Sample

c. *OPTC no parameters. The *OPTC card causes type-1 and type-9 cards to be printed when they are read by the program. This option may be useful for diagnosing errors. Type-1 cards are always printed at the end of the job as a separate report.

d. *OPTD no parameters. The *OPTD card causes the program identifier, if present to be stored in location 0002, the standard convention for PLANIT tapes. Absence of this control card causes program ID to be stored at location 0000, the MADCAP convention.

2.3 OUTPUT SELECTION

The output selection card is any one of 4 cards which specify the output device. The output selection card must be the first control card input to SSTGEN immediately following any *OPT- control cards. The output selection cards and their requirements are as follows:

a. *TEST no parameters. The *TEST control card specifies no card nor tape output is to be generated. It is useful in verifying files or diagnosing problems in conjunction with the option control cards. Initially it causes error messages 00 thru 11 to be printed with their corresponding text. Processing is otherwise identical to *DECK or *TAPE processing.

b. *TTC FILENAME,,VOL=999
The *TTC control card specifies output to a Tape Transport Cartridge (TTC). The filename is a required parameter, the volume identifier is optional. Default volume selection is "&LOAD".

EXAMPLES:

```
Col  1          10

     *TTC       MAD,,VOL=999

     *TTC       PLOAD
```

c. *TAPE FILENAME,,VOL=9283
The *TAPE control card specifies output to commercial tape. The filename is a required parameter, the volume identifier is optional. Default volume selection is "&LOAD".

EXAMPLES:

```
Col  1          10

     *TAPE      CTMAD,,VOL=0120

     *TAPE      CTPLANIT
```

d. *DECK no parameters. The *DECK control card specifies the card punch as the output device.

2.4 INPUT SELECTION

Input selection cards select the input device, volume or version and **filename,membername** of the data sets to be used in building a system tape. The ordering of the input selection cards, along with patch cards, determine the contents of the system load tape.

2.4.1 Unit Selection

The unit selection (card reader, tape unit or disk file) is determined by the contents of the FILENAME and MEMBERNAME fields on the following control cards:

```
*BOOT
*OBJ
*OBJ,NNNN
*DATA
```

The FILENAME and MEMBERNAME fields are used to determine the device type as follows:

a. FILENAME blank. Source data is cards following the control card, until the next control card is encountered.

b. FILENAME non-blank, MEMBERNAME blank. Source data is from labeled commercial tape with FILENAME specified.

c. FILENAME non-blank, MEMBERNAME non-blank. Source data is from SPS disk with the FILENAME and MEMBERNAME specified.

2.4.2 Input Data Process Selection

Four types of input data process selection cards are available. Three of these cards indicate the input data is an object deck to be converted to a bootable or object format on tape. The fourth indicates the input is a data deck to be converted to data format on tape. The control cards and their requirements are as follows:

a. *BOOT FILENAME,MEMBERNAME,VOL=7756,VERS=123
The *BOOT control card specifies the input data is an object deck to be converted to bootable format on the output device.

b. *OBJ FILENAME,MEMBERNAME,VOL=7756,VERS=123,ID=71
The *OBJ control card specifies the input data is an object deck to be converted to loadable object format on the output device.

c. *OBJ,NNNN FILENAME,MEMBERNAME,VOL=7756,VERS=123
The *OBJ,NNNN control card specifies the input is an object deck to be converted to loadable object format on the output device. NNNN is replaced by a one to four digit hexadecimal address which specifies the halfword address of the first instruction word to be written on the output device. NNNN may be thought of as an offset to the program. The first NNNN (0000 to NNNN-2) instructions of the program will be thrown away.

d. *DATA FILENAME,MEMBERNAME,VOL=7756,VERS=100
The *DATA control card specifies the input is a data deck to be converted to blank suppressed, blocked data records on the output device. Appendix C gives further information on the blank suppressed, blocked data records.

2.5 CONTROL SELECTION

There are two control selection cards which function as follows:

a. *MADEOF no parameters. The *MADEOF control card causes a 20-word record of all ones to be written on the output device. This record is recognized by MADCAP and PLANIT as an End-of-File indicator, indicating there are no more loadable program records on the tape.

b. *END no parameters. The *END card is the last control card in an SSTGEN jobstep and causes the output device to be closed and the summary list to be printed.

SECTION 3

PATCH CARD FORMATS

3.1 GENERAL FORMAT

The general format of a patch or set of patches is:

AAAA PATCHES

Where AAAA starts in column 1 and is replaced by a 1- thru 4-digit hexadecimal address, indicating where the data on the patch card is to be stored. This address may exceed the length of the program and the highest address will be saved as the new program end address. The address is followed by one and only one blank, then by zero or more data fields separated by commas. The last data field is terminated by a blank or by the end of the card. The remainder of the card after the last data field may be used for comments.

Each data field specifies one halfword (16 bits) of data. The data is stored in sequential halfwords. If the data field contains from one to four hexadecimal digits, the digits are converted to a right-justified 16-bit binary number. Leading zeroes are allowed but are not required.

3.2 INSTRUCTION FORMAT

If the data field contains five hexadecimal digits, they are interpreted in OPMHS instruction format where:

O = First 3 bits of opcode (legal range: 0-7)
P = Last 4 bits of opcode (legal range: 0-F)
M = Mode field (legal range: 0-3)
H = Accumulator designator (legal range: 0-F)
S = Index register designator (legal range: 0-7)

A patch data field containing more than five digits is illegal.

3.3 RELATIVE ADDRESS FORMAT

A patch data field may also contain a dollar sign as the first character. This is used for transfer instructions and instructions that fetch data from program literal pools. These instructions use relative mode addressing (mode 2) which means that the DAW field of an instruction contains

not the address of the operand but rather the distance (in halfwords) from the instruction to its operand (minus two halfwords).

As an example, the patch card

```
0400 30200,$800
```

causes the following instruction to be stored at location 0400:

```
30200 03FE
```

SECTION 4

DECK STRUCTURE

The structure of an SSTGEN job requires the use of PSS/OS job control language (JCL) cards, SSTGEN control cards, and patch cards. PSS/OS JCL cards are described in the PSS/OS User Manual. Appendix B contains several typical jobs with explanations.

The following simple rules are to clarify the location of patch cards in relationship with object decks and input control cards:

a. The first card defines the process and source of the data. It must be one of the following types:

```
*BOOT
*OBJ
*OBJ,NNNN
```

b. If the input is from cards, the object deck must immediately follow the *BOOT, *OBJ or *OBJ,NNNN card.

c. Next comes the optional patch card area of the deck. The patch card area is defined as all the cards until a card containing an asterisk (*) in column 1 is encountered. Within this space, cards with column 1 blank or containing an ampersand will be treated as comment cards and simply are printed. Patch cards conforming to the Section 3 description are the only other cards permitted in this space. The patch cards are applied to the program in memory as they are encountered.

d. When the next asterisk (*) card is encountered, the program currently in memory is written on the output device.

Figure 4-1 shows an example of this deck structure.

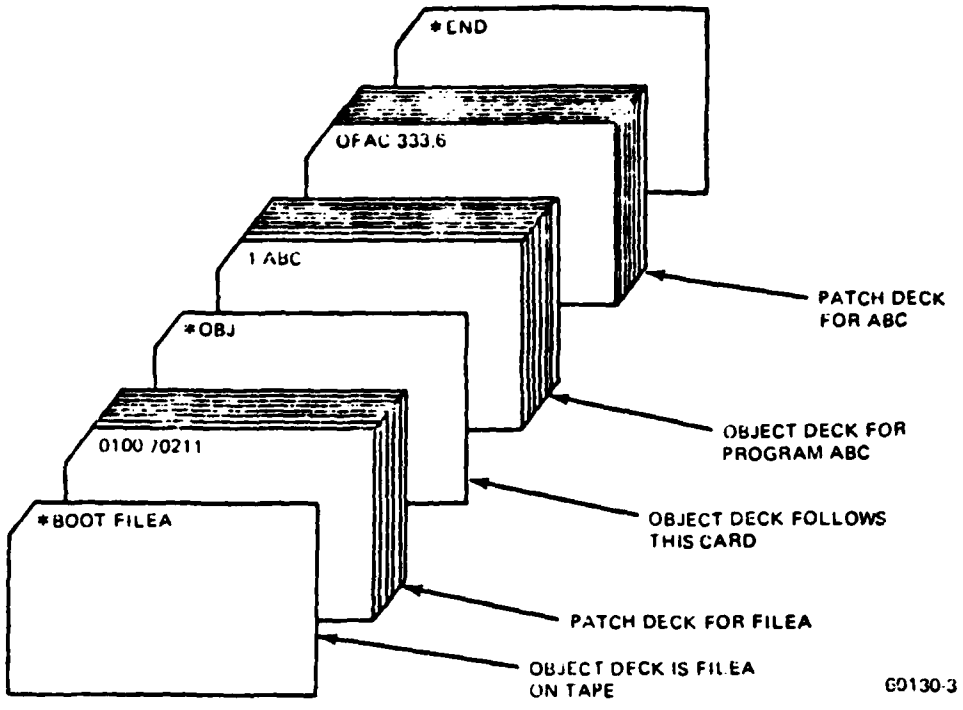

Figure 4-1. Sample Deck Structure

SECTION 5

INPUT FILE FORMATS

SSTGEN is set up to accept input from disk or tape files or directly from cards. This section describes these formats and restrictions.

5.1 CARD INPUT

If card input is used it must be a legal object deck from the compiler or a data deck. If the *DATA card is used and input is cards, then a data card containing an asterisk (*) in column 1 is illegal, as it marks the end of the data deck. If such a data card is required then the deck will first have to be transferred to a tape or disk file.

5.2 TAPE OR DISK FILE INPUT

Data will be accepted properly from a disk or tape file blocked from 1 to 10 logical records per physical record. The logical record size for an object deck is 20 words (80 characters). The logical record size for data files is 21 (84 characters).

These file formats are specifically oriented to the tape and disk librarian programs available under PSS/OS. The library types used are OBJECT for object decks, and SOURCE for data decks. Only the first 72 characters of a data card are used so as not to defeat the trailing blank suppression feature of the packed format. Several characteristics of tape and disk files require additional consideration.

5.2.1 Tape Files

Tape files should be generated in file sequential order by the program LIBGEN. This allows files to be used by SSTGEN sequentially without rewinding the tape. If both object and data files are to be used they should be generated on the same tape in the correct order, for example:

a. Library AAAA,OBJECT - contains object decks in order.

b. Library BBBB,SOURCE - contains data decks in order.

5.2.2 Disk Files

Normally disk files will be generated by the program SPSLIB. They may also be generated directly by the compile in the case of object decks. Unlike tape files there is no ordering problems with files on disk. SSTGEN will automatically read the latest version of a disk file unless the VERS parameter is specified on the control card.

SECTION 6

OUTPUT FORMATS

6.1 DECK OUTPUT

The deck output is normally only useful for a single boot output. The output for a boot deck is the normal program in EBCDIC preceded by 7-boot words also in EBCDIC.

6.2 TTC OUTPUT

TTC output format is one record per program. Boot records will be preceded by 7-boot bytes. Data files will be written as one or more 2000 word ASCII records with the format described in Appendix C.

6.3 TAPE OUTPUT

6.3.1 IBM-PEBU Tape Format

The output for commercial tapes written on an IBM-PEBU are the same as TTC output with the exception of boot records which are preceded by 7-boot words rather than boot bytes.

6.3.2 SPS Tape Format

The SPS has a restriction on the size of tape records written, limiting them to 2048 words per record maximum. A single program may be written as one or more records on tape. In the case of a bootable program, the hardware will ignore any inter-record gaps and read the complete program in. In the case of object programs greater than 2048 words, the loading program will have to provide the additional processing to read in the complete program.

6.4 LISTINGS

The first part of the listing generated by SSTGEN is during the processing of the input job stream. Control cards, patch cards, and error messages along with optional selections (*OPTA, *OPTB and *OPTC) are printed during the process. When the *END card is encountered, a Summary Report is printed which contains the type-1 cards which identify the object decks utilized. The SSTGEN control cards *DATA and *MADEOF are used in place of type-1 cards in this report. The summary report also lists the following items for each entry:

a. RCDS - The count of type-0 cards in an object deck or count of data cards in a data deck.

b. PTCH - The count of patch cards applying to a particular program.

c. ADRS - The last word address of the program record. This value will be the program size or highest patch address if greater than the program size.

d. BOOT BYTES - If the program is bootable, the boot bytes will be listed.

Following the last type-1 card (or equivalent), the message "ITEMS = nnnn ERRORS = eeee" is printed. The items count is the number type-1 cards (or equivalent) and the error count is the number of errors. The item and error counts would normally be checked first to see if a tape was made correctly.

APPENDIX A

ERROR MESSAGES

The following messages will be output by SSTGEN when errors are detected. Messages 01 thru 10 will be printed with the text indicated in capital letters. Other messages will be printed with the caption "ERROR, SEE USER MANUAL".

ERROR	DESCRIPTION
01	NO MODE CARD, SET TO TEST. The first card after any option cards was not an output selection card.
02	OUTPUT FILE ERR, SET TO TEST. Output file description not correctly accepted by PSS/OS; verify output selection card.
03	CONTROL CARD ERROR, CARD IGNORED. Invalid control card or invalid field on control card.
04	INPUT FILE ERR, FILE IGNORED. Output file description not correctly accepted by PSS/OS; verify input selection card.
05	NO TYPE1 CARD, DECK IGNORED. *OPTA dump if selected.
06	NO TYPE9 CARD, DECK IGNORED. *OPTA dump if selected.
07	OBJECT DECK NOT IN ORDER. *OPTA dump if selected.
08	OBJECT CARD CHECKSUM ERROR. *OPTA dump if selected.
09	BAD OBJECT CARD, DECK IGNORED. *OPTA dump if selected. Card was other than type 0, 5, 6, 8 or 9.
10	PATCH CARD ERROR. Address was greater than 3FFF or otherwise did not comply with Section 3 rules.

ERROR	DESCRIPTION
20	SSTGEN program entry table exceeded 99 entries (program limit).
21	Type-0 ADDRESS ERROR. Address greater than 3FFF. *DPTA dump if selected.
22 thru 26	Input tape file description not correctly accepted by PSS/OS. Verify input selection cards.
27,28	Input disk file description not correctly accepted by PSS/OS. Verify input selection cards.
44	Illegal ID value found in ID, parameter. It should be a 1-to 4-digit hexadecimal number.

APPENDIX B

SAMPLE JOBS

This appendix contains typical standard job decks and various modifications that might be made to the standard job decks during the course of program development. Each figure includes explanatory notes.

```
()JOB     DZMJAH57,HOFF,CLAS=A
()FILE    MADOBJ,SSTGEN,UNIT=7,ACSS=READ,IDIS=SHR
()EXEC    TPBUILD,NODUMP
FILE                MADOBJ    SSTGEN
&&DLIM
()EXEC    SSTGEN
*TTC      LOAD,,VOL=&TTC                    OUTPUT TO TTC
*BOOT     DBMDOBJ,MDFI02                    CPU FAULT ISOLATION
*OBJ      DBMDOBJ,MDFI03                    CMU FAULT ISOLATION
*OBJ,7F6  MADOBJ,MADCAP                     MADCAP
*BOOT     MADOBJ,UTSPACER                   UNIT TEST SPACER
*OBJ      MADOBJ,PSMDFI04                   PSSB RAM FAULT ISOLATION
*OBJ      MADOBJ,MDCL01,ID=2110             FIELD SCHEDULER
*OBJ      MADOBJ,MADSUP40,ID=3120           MADCAP SUP40 PROCESSOR
*OBJ      MADOBJ,PSMDCL03,ID=3180           PSSB SCHEDULER
*OBJ      MADOBJ,PSMDCL04,ID=2190           PSSB EXECUTIVE
*OBJ      MADOBJ,MDFD01,ID=20               LOCAL LOOP TEST
*OBJ      MADOBJ,MDFD02,ID=30               CPU FAULT DETECTION
*OBJ      MADOBJ,MDFD03,ID=40               MEM FAULT DETECTION
*OBJ      MADOBJ,MDFD05,ID=60               ARMM FAULT DETECTION
*OBJ      MADOBJ,MDFD06,ID=70               ACC FAULT DETECTION
*OBJ      MADOBJ,MDFD07,ID=80               ETD FAULT DETECTION
*OBJ      MADOBJ,MDFD08,ID=90               DPM FAULT DETECTION
*OBJ      MADOBJ,MDFD09,ID=A0               ELP FAULT DETECTION
*OBJ      MADOBJ,MDFD10,ID=B0               DDT FAULT DETECTION
*OBJ      MADOBJ,MDFD11,ID=C0               DFMED LOOP TEST
*OBJ      MADOBJ,MDFD12,ID=D0               EFMED LOOP TEST
*OBJ      MADOBJ,MDFD13,ID=E0               BDU LOOP TEST
*OBJ      MADOBJ,MDFD14,ID=F0               FDC/FDC LOOP TEST
*OBJ      MADOBJ,MDFD15,ID=100              RG FAULT DETECTION
*OBJ      MADOBJ,MDFI05,ID=130              ARMM FAULT ISOLATION
*OBJ      MADOBJ,MDFI06,ID=140              ACC FAULT ISOLATION
*OBJ      MADOBJ,MDFI07,ID=150              ETD FAULT ISOLATION
*OBJ      MADOBJ,MDFI08,ID=160              DPM FAULT ISOLATION
*OBJ      MADOBJ,MDFI09,ID=170              ELP FAULT ISOLATION
*OBJ      MADOBJ,MDFX04,ID=1F0              RAM DISTURB
```

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Figure B-1. Standard MADCAP Job Deck (1 of 2)

```
*OBJ      MADOBJ,MDFD02,ID=1A0          CPU FAULT DETECTION
*OBJ      MADOBJ,MDFD03,ID=1B0          MEM FAULT DETECTION
*OBJ      MADOBJ,PSMDFD04,ID=1C0        PSSB RAM FAULT DETECTION
*OBJ      MADOBJ,MDFD05,ID=1D0          ARMM FAULT DETECTION
*OBJ      MADOBJ,PSMDFD21,ID=210        PSSB CTS FAULT DETECTION
*OBJ      MADOBJ,PSMDFI21,ID=260        PSSB CTS FAULT ISOLATION
*OBJ      MADOBJ,MDFI05,ID=2B0          ARMM FAULT ISOLATION
*MADEOF
*BOOT     MADOBJ,CPUUT                  CPU UNIT TEST
*BOOT     MADOBJ,ARMUT                  ARMM UNIT TEST
*BOOT     MADOBJ,ETDUT                  ETD UNIT TEST
*BOOT     MADOBJ,ELPUT                  ELP UNIT TEST
*BOOT     MADOBJ,ACCUT                  ACC UNIT TEST
*BOOT     MADOBJ,DDTUT                  DDT UNIT TEST
*BOOT     MADOBJ,VFMUT                  VFMED UNIT TEST
*BOOT     MADOBJ,BDUUT                  BDU UNIT TEST
*BOOT     MADOBJ,FMDUT                  FFMED UNIT TEST
*BOOT     MADOBJ,RAMUT                  RAM UNIT TEST
*BOOT     MADOBJ,DPMUT                  DPM UNIT TEST
*BOOT     MADOBJ,COMDUPE                COMDUPE (COPY FIELD TAPE)
*BOOT     MADOBJ,CCCUT                  CCC UNIT TEST (TEST SET)
*BOOT     MADOBJ,BERT                   BERT (BIT ERROR RATE TEST)
*BOOT     MADOBJ,DMDUT                  DMD UNIT TEST
*BOOT     MADOBJ,IOUUT                  IOU UNIT TEST
*END
()END
```

NOTE: All files, including SSTGEN, are located on disk data sets.

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Figure B-1. Standard MADCAP Job Deck (2 of 2)

```
()JOB     DZABAH99,HOFF,CLAS=A,TAPE=1
()EXEC    TPBUILD,NODUMP
CARD
1 SSTGEN                                  OBJECT DECK FOR SSTGEN
          .                               OBJECT DECK FOR SSTGEN
          .                               OBJECT DECK FOR SSTGEN
          .                               OBJECT DECK FOR SSTGEN
9 SSTGEN                                  OBJECT DECK FOR SSTGEN
&&DLIM
()EXEC    SSTGEN
*OPTD                                     SET PLANIT ID OPTION
*TTC      LOAD,,VOL=666                   OUTPUT TO TTC S/N 666
*BOOT     POS,,VOL=&PLN
*OBJ      RAMCHECK,,ID=10
*OBJ      MIOP,,ID=20
*OBJ      TMIOP,,ID=21
*OBJ      PLANIT,,ID=30
*OBJ      PLAN1,,ID=41
*OBJ      PLAN2,,ID=42
*OBJ      PLAN3,,ID=43
*OBJ      PLAN4,,ID=44
*OBJ      PLAN5,,ID=45
*OBJ      PLAN6,,ID=46
*OBJ      PLAN7,,ID=47
*OBJ      PLAN8,,ID=48
*OBJ      FINAL,,ID=5F
*OBJ      START,,ID=60
*MADECF
*DATA     CFILE91                         3 MCMU CARDS FILE
*END
()END
```

NOTE: SSTGEN is a card deck. All the other files are located on a single tape volume.

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Figure B-2. Standard PLANIT Job Deck

REMOVE THE FOLLOWING CARD
FROM THE STANDARD MADCAP JOB DECK

```
*OBJ     MADOBJ,MDFDO1,ID=20        LOCAL LOOP TEST
```

REPLACE WITH THE FOLLOWING CARD

```
*OBJ     OBJDECK,HBMDFDO1,ID=20     **** DEVELOPMENT ****
```

NOTE: The above are the changes to make a MADCAP TTC with a development version of MDFDO1 located on the disk data set OBJDECK.

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Figure B-3. Development Program from Disk for MADCAP TTC

REMOVE THE FOLLOWING CARDS
FROM THE STANDARD PLANIT JOB DECK

```
*OBJ     PLAN4,,ID=44
*OBJ     PLAN5,,ID=45
```

REPLACE WITH THE FOLLOWING CARDS

```
*OBJ     PLAN4,,ID=44,VOL=&DEV     *** DEVELOPMENT ***
*OBJ     PLAN5,,ID=45,VOL=&PLN     (RETURN TO ORIG TAPE)
```

NOTE: The above are the changes to make a PLANIT TTC with a development version of PLAN4 located on a different tape volume. Especially note that the original volume (&PLN) must be called out again on the PLAN5 control card.

60130-8

Figure B-4. Development Program From Tape For PLANIT TTC

REMOVE THE FOLLOWING CARD
FROM THE STANDARD MADCAP JOB DECK

```
*OBJ     MADOBJ,MDFDO2,ID=30     CPU FAULT DETECTION
```

REPLACE WITH THE FOLLOWING CARDS

```
*OBJ     ,,ID=30    *** DEVELOPMENT FDO2 FROM CARDS ***
1 MDFDO2 )
0        )
0        )              the object deck for MDFDO2
0        )
...      )
9 MDFDO2 )
```

NOTE: The above are the changes to make a MADCAP TTC with a development version of MDFDO2 in card deck format.

60130-9

Figure B-5. Development Program From Cards For MADCAP TTC

Figure B-6 shows a portion of the job deck as it might appear for creating a released MADCAP TTC with patch ECOs to MDFIO2, MDFIO3, PSMDFIO4 and MDFDO1. Note that the library patch deck used to make the TACFIRE FIELD TAPE is acceptable for use in SSTGEN job decks with the following exceptions:

a. MDFIO2 - The patches required by the library are offset by 14-halfwords from the true address to accommodate boot bytes.

b. MDFIO3 and PSMDFIO4 - The patches required by the library are offset by fixed constants and are located in the INITIAL1 file.

Equivalent patch decks must be prepared for the above programs using the true address as shown in the program listing.

```
  ...
 *ROOT    DBMDOBJ,MDFIO2                    CPU FAULT ISOLATION
          EQUIVILANT TO S-88888 TO MDFIO2  599168-4253-001
 2062 0,0   NOP XFR SW ERROR STOP
 2064 0,0   NOP XFR SW ERROR STOP
 2066 0,0   NOP XFR SW ERROR STOP
 2068 0,0   NOP XFR SW ERROR STOP
 *OBJ     DBMDOBJ,MDFIO3                    CMU FAULT ISOLATION
          EQUIVILANT TO S-77777 TO MDFIO3 599193-4254-001
 0366 0,0   NOP PORT B TEST
 *OBJ,7F6 MADOBJ,MADCAP                     MADCAP
 *ROOT    MADOBJ,UTSPACER                   UNIT TEST SPACER
 *OBJ     MADOBJ,PSMDFIO4                   PSSB RAM FAULT ISOLATION
          EQUIVILANT TO S-66666 TO PSMDFIO4  599381-4201-001
 07AE $333 CORRECT TRANSFER TO ADDRESS
 *OBJ     MADOBJ,MDCL01,ID=2110             FIELD SCHEDULER
 *OBJ     MADOBJ,MADSUP40,ID=3120           MADCAP SUP40 PROCESSOR
 *OBJ     MADOBJ,PSMDCL03,ID=3180           PSSB SCHEDULER
 *OBJ     MADOBJ,PSMDCL04,ID=2190           PSSB  EXECUTIVE
 *OBJ     MADOBJ,MDFD01,ID=20               LOCAL LOOP TEST
 &&PGM=MDFD01                  SAMPLE        S-99999 MDFD01   599153-4253-001
 0200 30200,$106   CORRECT XFR               S-99999 MDFD01   599153-4253-001
 0300 0,1,2,3  REVISE TABLE                  S-99999 MDFD01   599153-4253-001
 *OBJ     MADOBJ,MDFD02,ID=30               CPU FAULT DETECTION
  ...
```

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Figure B-6. MADCAP Job Deck With Patch ECOs

APPENDIX C

BLANK SUPPRESSED, BLOCKED DATA RECORDS

This appendix describes the blank suppressed, blocked data record format generated by SSTGEN and used by PLANIT for ASCII card data on tape. The process consists of dropping the trailing blanks from a 72-column card image and packing the truncated card image in 2000-word blocks to be written on tape. Three special characters are also packed with the data for control purposes. The special characters are as follows:

a. FC (hexadecimal) - indicates the end of a card image.

b. FD (hexadecimal) - indicates the end of a physical tape record (no more card data in this record).

c. FE (hexadecimal) - the end-of-file indicator for the entire data set. This is not to be confused with nor take the place of the PLANIT End-of-File indicator $$$$.

Figure C-1 shows portions of a typical source deck and the resultant packed format.

ORIGINAL CARDS

```
*DATA                    (CARD SOURCE DATA DECK)
THIS IS THE SOURCE FOR
A TYPICAL DATA
DECK. THE
...
...
...
THESE LAST CARDS REPRESENT THE CARDS
NEAR THE END OF THE "TO BE WRITTEN"
DATA BLOCK.
FOLLOWING IS THE LAST CARD OF THE SET.
$$$$
*END
```

RESULTANT PACKING

```
THIS IS THE SOURCE FOR FC A TYPICAL DATA FC DECK.  THE FC ...

...FC DATA BLOCK.FC FD

FOLLOWING IS THE LAST CARD OF THE SET.FC $$$$ FC FE
```

60130-11

Figure C-1. Typical Source And Packed Data Format